

Abstract of the Disclosure

Disclosed are electrolyte compositions for depositing a tin alloy on a substrate. The electrolyte compositions include tin ions, ions of one or more alloying metals, an acid, a thiourea derivative, and an additive selected from alkanol amines, polyethylene
5 imines, alkoxylated aromatic alcohols, and combinations thereof. Also disclosed are methods of depositing a tin alloy on a substrate and methods of forming an interconnect bump on a semiconductor device.